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TITLE: DIAMOND KIND COATED MEMBER
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INVENTOR-INFORMATION:

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ABSTRACT:

PURPOSE: To obtain a cutting tool, etc., free from deterioration in a diamond film even in the case of high-speed cutting and excellent in the adhesive strength of the diamond film to a base material by forming a diamond kind film on the surface of a ceramic base material composed principally of Si<SB>3</SB>N<SB>4</SB> and having specific thermal conductivity by a vapor phase process.

CONSTITUTION: A mixture prepared by using Si<SB>3</SB>N<SB>4</SB> as a principal component and also using ZrO<SB>2</SB> or MgO as sintering auxiliary and further mixing, if necessary, proper amounts of oxide ceramics,

such as
zirconia, mullite, and spinel, or non-oxide ceramics, such as SiC and BN, is
compacted and sintered, by which a ceramic base material having
≥40W/m.K
thermal conductivity is produced. Subsequently, a gaseous mixture of
carbon-containing gas, such as various hydrocarbons, methane halide,
acetone,
and trimethylamine, and hydrogen gas is excited and brought into
contact with
the surface of the above ceramic base material, by which a super hard
diamond
diamond film can be formed on the surface of the base material with
superior
adhesive strength.

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